

Mixed Integration Practice
(selected answers)

$$\textcircled{3} \int_1^2 \frac{x-2}{x} dx = \int_1^2 \left(1 - \frac{2}{x}\right) dx =$$

$$x - 2\ln|x| \Big|_1^2 = (2 - 2\ln(2)) - (1 - 2\ln(1))$$

$$2 - 2\ln(2) - 1 + 0$$

$$\boxed{1 - 2\ln(2)}$$

$$\textcircled{4} \int_0^{\frac{\pi}{4}} \cos(x) dx = \sin(x) \Big|_0^{\pi/4} =$$

$$\sin\left(\frac{\pi}{4}\right) - \sin(0)$$

$$\frac{\sqrt{2}}{2}$$

$$- 0 =$$

$$\boxed{\frac{\sqrt{2}}{2}}$$

$$\textcircled{5} \int (2x^3 + \sec(x) - 3x^{-2}) dx$$

$$\frac{1}{2}x^4 + \ln|\sec(x) + \tan(x)| + 3x^{-1} + C$$

$$\textcircled{6} \int \left(\frac{4}{x} + \csc(x) \cot(x) + 7 \right) dx =$$

$$4 \int \frac{1}{x} dx + \int \csc(x) \cot(x) dx + \int 7 dx =$$

$$4 \ln|x| - \csc(x) + 7x + C$$

$$\textcircled{8} \int (4e^x + \tan(x) - \sec^2(x)) dx$$

$$4e^x - \ln|\cos(x)| - \tan(x) + C$$

$$\textcircled{9} \quad \int_1^4 f(x) dx = 2 \quad \int_1^4 g(x) dx = 10$$

$$\int_1^4 (3f(x) - g(x)) dx = 3 \int_1^4 f(x) dx - \int_1^4 g(x) dx$$

$$3(2) - 10 = \boxed{-4}$$

$$\textcircled{10} \quad \int_{-2}^1 f(x) dx = 2 \quad \int_1^3 f(x) dx = 6$$

$$\int_3^{-2} f(x) dx = - \int_{-2}^3 f(x) dx = \boxed{-8}$$